Source Water Assessment Program (SWAP) Report For Bittersweet Farm Inc.

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

? Inventory land uses within the recharge areas of all public water supply sources;

? Assess the susceptibility of drinking water sources to contamination from these land uses; and

? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

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Table 1: Public Water System (PWS) Information

PWS NAME	Bittersweet Farm Inc.
PWS Address	438 Main Road
City/Town	Westport, Massachusetts
PWS ID Number	4334065
Local Contact	Richard LaFrance
Phone Number	(508) 636-0085

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	4334065-01G	147	445	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

Bittersweet Farm Inc. is a privately owned restaurant with the seating capacity of 180 persons. Bittersweet Farm is served by Well #1 that is located 280 feet east of the restaurant. Well #1 is a bedrock well drilled to a depth of 270 feet below grade. The well is located on the edge of the lawn and just north of the gated dirt access road. The well is located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers (e.g. clay layers) that can prevent contaminant migration. In a July 23rd, 1998 sanitary survey, the Department assigned a Zone I of 220 feet and Interim Wellhead Protection Area (IWPA) of 540 feet based on septic system design flows of 6300 gallons per day. Subsequent to this determination of the Zone I and IWPA, the facility has collected two (2) years of metered water readings which the Department

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by **the** water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

has used to recalculate your wellhead protection area. Based on the daily average metered readings of 2042 gallons per day, the revised Zone I and IWPA are 147 feet and 445 feet, respectively. The IWPA provides an interim protection area for a water supply well when the actual recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. Please refer to the attached map of the Zone I and IWPA. The well serving the facility has no treatment at this time. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1.

2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Inappropriate Activities in Zone Is, and**
2. **Septic System,**
3. **Illegal Dumping,**
4. **Storage, Use and Handling of Oil/Hazardous Materials,**
5. **Lawn Care and Landscaping.**

The overall ranking of susceptibility to contamination for the well is Moderate, based on the presence of at least one Moderate threat land use or activity in the IWPA, as seen in Table 2.

1. **Zone Is –** Currently, the well does not meet DEP's restrictions, which only allow water supply related activities in Zone Is. The facility's Zone I contain a landscaped area used for recreational activities. The public water supplier owns and/or controls all land encompassed by the Zone 1. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

   Recommendations:

   - The Department recommends posting drinking water protection signs at key visibility locations.
   - Remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
   - Do not use or store pesticides, fertilizers or road salt within the Zone I.

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
~~Illegal Dumping~~	No	~~Well #1~~	~~High~~	55-gallon drum removed
Storage, use and handling of oil/hazardous materials	No	Well #1	Moderate	Garage
Parking lot, driveways & roads	No	Well #1	Moderate	Limit road salt usage and provide drainage away from wells
Lawn Care and landscaping	Well #1	Well #1	Moderate	Fertilizer and pesticide use
Septic System	No	Well #1	Moderate	Refer to septic systems brochure in the attachments
Structures	No	Well #1	-	Non-water supply structures in Zone I

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

2. **Septic System** –A new septic system was installed in 1998. The new septic system leaching field was installed 177 feet from Well #1 under the current parking area. The septic system is designed for a 144 seat restaurant with a 36 seat lounge. If a septic system fails or is not properly maintained it could be a potential source of nutrients and microbial contamination. Improper disposal of household hazardous chemicals to the septic system is a potential source of contamination to the water supply.

   Recommendations:
   - Septic system components should be located, inspected, and maintained on a regular basis. Refer to attachment for more information regarding septic systems.
   - Custodial staff and groundskeepers should be instructed on the proper disposal of spent cleaning chemicals.

3. **Illegal Dumping**-As part of the SWAP site visit, the Zone I and IWPA were assessed for potential sources of contamination. During the site visit a 55-gallon drum containing an unknown liquid was observed in the Zone I east of the well. A strong petroleum odor was present. The public water supply owner was notified and provided with the names of hazardous waste disposal contractors. Additionally, a dilapidated truck was observed in the IWPA east of the well.

   Recommendation implemented: The drums contents were identified as waste oil and transported for proper disposal.

   Additional Recommendations:
   - Conduct regular inspections of the Zone 1 and IWPA. Look for illegal dumping and evidence of vandalism.
   - Prohibit public access to the well by locking facilities, gaping roads and posting signs.
   - Remove truck from IWPA.

4. **Storage, Use and Handling of Hazardous Materials**-A garage is located within the IWPA of Well #1 just south of the restaurant building. The materials kept within the garage (e.g. gasoline, lawn mower, tractor, petroleum products, paint thinner) pose a potential threat to the well due to the proximity potential for accidental release.

   Recommendation:
   - Use containment and caution when using and storing these products.

5. **Lawn Care and Landscaping**-Over application of pesticides and fertilizers on lawns is a potential source of contamination to the water supply.

   Recommendation:
   - Provide educational materials to staff about the proper application of pesticides or fertilizers. Additional, information on environmentally sound lawn care practices can be obtained from the Massachusetts Department of Food and Agriculture Pesticide Bureau's web site at http://www.massdfa.org.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

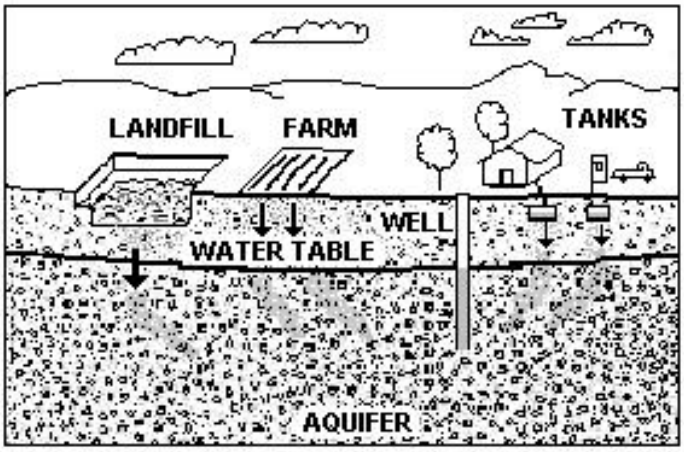

Figure 1: Example of how a well could become contaminated by different land uses and activities.

For More Information:

Contact Mark Dakers in DEP's Lakeville Office at (508) 946-2847 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier, and town boards.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the Well #1 susceptibility to contamination. Bittersweet Farm should review and adopt the **key recommendations** above and the following:

Zone I:

- Keep non-water supply activities out of the Zone I.
- To the extent feasible, remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
- Redirect road and parking lot drainage in the Zone I away from well.
- Do not use or store pesticides, fertilizers or road salt within the Zone I.

Training and Education:

- Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, certified operator, and food preparation staff. Post labels as appropriate on raw materials and hazardous waste.
- Post drinking water protection area signs at key visibility locations.

Facilities Management:

- Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, see the hazardous materials guidance manual at www.state.ma.us/dep/bwp/dhm/dhmpubs.html.
- Eliminate non-sanitary wastewater discharges to on-site septic systems. Instead, in areas using hazardous materials, discharge drains to a tight tank or sanitary sewer.
- Remove hazardous materials from rooms with floor drains that drain to the ground or septic systems.
- Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility property.
- Septic system components should be located, inspected, and maintained on a regular basis.

Planning:

- Work with local officials in Westport to include Bittersweet Farm's IWPA in Aquifer Protection District Bylaws and to assist you in improving protection.
- Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact sheet
- Your Septic System Brochure

- Pesticide Use Fact sheet
- Fertilizer Use Fact Sheet
- Source Protection Sign Order Form